

REMARKS

The present Amendment amends claims 1, 3-8 and 10 and leaves claims 2, 9 and 11 unchanged. Therefore, the present application has pending claims 1-11.

In the January 30, 2004 Amendment, which responded to the September 30, 2003 Office Action the Examiner was requested to consider the Information Disclosure Statement filed on April 6, 2001 along with the present application. A copy of said Information Disclosure Statement was provided by said January 30, 2004 Amendment. As of yet, the Examiner has not indicated that the references cited therein have been considered. The Examiner is strongly urge to indicate that the April 6, 2001 Information Disclosure Statement has been considered as required since the Information Disclosure Statement was timely and should have already been considered.

In paragraph 3 of the Office Action the Examiner alleges that the specification has not been checked to the extent necessary to determine the presence of all possible minor errors. The specification has again been reviewed so as to determine the presence of any minor errors. No such minor errors were uncovered. The Examiner is respectfully requested to indicate any minor errors the Examiner may be aware of so that such minor errors may be corrected so as to expedite prosecution of the present application. Otherwise this objection should be withdrawn.

Applicants acknowledge the Examiner's indication in paragraph 12 of the Office Action that claims 3-5, 7, 8, 10 and 11 would be allowable if rewritten or amended in independent form including all the limitations of the base claim and any intervening claims. Amendments were made to claims 3-5, 7, 8, 10 and 11 to place

them in independent form including all the limitations of the base claim and any intervening claims. Therefore, claims 3-5, 7, 8, 10 and 11 are allowable as indicated by the Examiner.

Claims 1, 2, 6 and 9 stand rejected under 35 USC §102(b) as being anticipated by Moyer (U.S. Patent No. 5,860,129); claims 1, 2, 6 and 9 stand rejected under 35 USC §102(e) as being anticipated by Silvkoff (U.S. Patent No. 6,601,130). These rejections are traversed for the following reasons. Applicants submit that the features of the present invention as now recited in claims 1, 2, 6 and 9 are not taught or suggested by Moyer or Silvkoff whether taken individually or in combination with any of the other references of record. Therefore, Applicants respectfully request the Examiner to reconsider and withdraw these rejections.

Amendments were made to the claims so as to more clearly recite that the present invention provides an information processing system and a memory controller for use in the information processing system wherein the memory controller controls the memory unit. The memory controller includes storing means for storing changeable memory control timing information, monitoring means for monitoring an operation state of the memory unit, a register for setting therein the ~~memory control timing information from the memory control timing information~~ storing means and control means for controlling an accessing timing to the memory unit based on the memory control timing information in the register and for dynamically changing the information stored in the memory control timing information storing means based on information from the monitoring means.

Thus, as is quite clear from the above, the present invention provides a memory controller in which the memory access timing control can be dynamically changed in accordance with changes in the operation state of the memory. This feature of the present invention allows for memory performance and hence system performance to be dynamically changed or enhanced as needed depending upon the operation state of the memory.

The above described features of the present invention are not taught or suggested by any of the references of record particularly Moyer and Silvkoff whether taken individually or in combination with any of the other references of record.

Moyer merely discloses a data processing system which provides flexibility in interfacing with a variety of memory devices and external peripheral devices. Moyer discloses that in order to connect a data processing unit to a plurality of different kinds of memory devices, a group of memory control registers corresponding to the chip select (CS) signals are provided and a memory register is read out according to each request so as to provide the relevant memory control signals. Thus, in Moyer when a predetermined chip select signal is asserted each of a plurality of a corresponding set of bits is retrieved from an internal memory and stored in a control register. Based on the information stored in the control register, Moyer teaches that the timing period of each of the read and write operations is controller.

However, at no point is there any teaching or suggestion in Moyer of apparatus for monitoring an operating state of the memory and dynamically changing the memory control timing information stored in the memory control timing

information storing means based on information from the monitoring means. Such loop control is not taught or suggested by Moyer.

Therefore, Moyer fails to teach or suggest monitoring means for storing an operating state of the memory unit and control means for controlling an access timing to the memory unit based on the memory timing information in the register and for dynamically changing the stored in the memory control timing information storing means based on information from the monitoring means as recited in the claims.

The above noted deficiencies of Moyer are also evident in Silvkoff.

Silvkoff merely discloses a memory interface unit for coupling a microprocessor to a memory external to the processor wherein the memory interface provides unique strobes for each of the memory banks which are programmable depending upon the type of memory bank to which a particular strobe relates. Thus, in Silvkoff in order connect a data processing unit to a plurality of different kinds of memories, strobes signals are provided for respective memories whereby setting of the strobe signals is made changeable according to the memory type.

Thus, it is quite clear that Silvkoff fails to teach or suggest the features of the present invention wherein apparatus is provided for monitoring the operation state of the memory and for dynamically changing the memory control timing information stored in the memory control timing information storing means based on information from the monitoring means as in the present invention.

Therefore, Silvkoff fails to teach or suggest monitoring means for monitoring means for monitoring an operating state of the memory unit and control means for

controlling an access timing to the memory unit based on the memory control timing information in the register and for dynamically changing the information stored in the memory control timing information storing means based on information from the monitoring means as recited in the claims.

Accordingly, the unique features according to the present invention not taught or suggested by Moyer or Silvkoff is that the memory control timing information can be dynamically changed based on the monitored state of the memory and thus the access timing to access the memory unit. This dynamic changing of the access timing with respect to the memory unit allows for the access timing to be constantly modified and adjusted as needed depending upon the memory unit. Such features are clearly not taught or suggested by any of the references of record whether taken individually or in combination with each other.

The remaining references of record have been studied. Applicants submit that they do not supply any of the deficiencies noted above with respect to the references utilized in the rejection of claims 1, 2, 6 and 9.

In view of the foregoing amendments and remarks, Applicants submit that claims 1-11 are in condition for allowance. Accordingly, early allowance of claims 1-11 is respectfully requested.

To the extent necessary, the applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, or credit any overpayment of fees, to the deposit account of Antonelli, Terry, Stout & Kraus, LLP, Deposit Account No. 01-2135 (500.39978X0).

Respectfully submitted,

ANTONELLI, TERRY, STOUT & KRAUS, LLP



Carl I. Brundidge
Registration No. 29,621

CIB/jdc
(703) 312-6600